



U.S. Department  
of Transportation

**Federal Highway  
Administration**

400 Seventh St., S.W.  
Washington, D.C. 20590

OCT 12 2000

Refer to: WZ-56

Mr. Jan D. Miller  
Eastern Metal/USA Sign  
1430 Sullivan Street  
Elmira, New York 14901-1698

Dear Mr. Miller:

Thank you for your July 24 letter requesting Federal Highway Administration (FHWA) acceptance of your company's barricade and portable sign stands as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). Accompanying your letter was a report from Safety Quest, Incorporated, illustrations of the devices, and videos of the crash tests. You requested that we find your company's devices acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

### **Introduction**

The FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled "Information: Identifying Acceptable Highway Safety Features," established four categories of work zone devices: Category I devices were those lightweight devices which could be self-certified by the vendor, Category II devices were other lightweight devices which needed individual crash testing, Category III devices were barriers and other fixed or massive devices also needing crash testing, and Category IV devices were trailer mounted lighted signs, arrow panels, etc. The second guidance memorandum was issued on August 28, 1998, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This later memorandum lists devices that are acceptable under Categories I, II, and III.

A brief description of the devices for which you are requesting acceptance follows. Drawings and/or product literature for these devices are enclosed for reference.

#### Request 1

Model C-222 Super-Flex Compact Sign Stand with fiberglass leaf spring and Extended Mast, 1220 mm (48 inch) "Rigid Roll Up"<sup>TM</sup> sign with 8 mm ( 5/16 inch) thick horizontal crossbrace and 3 wood dowel flags. The "Rigid Roll Up" refers to the additional stiffness of the horizontal fiberglass spreader. This stand has the same base, leg, and leaf spring configuration as your company's C-202 series except it has a telescoping mast. The C-202 stand was found acceptable in our letter WZ- 13, dated June 3, 1999. Because of its similarity to the C-202 system, it was agreed that only 90-degree testing would be required to qualify the C-222 stand.

## Request 2

Model X-642 Hi Level Aluminum Sign Stand with fiberglass leaf spring, 1220 mm (48 inch) "Rigid Roll Up"<sup>TM</sup> sign stand with 5/16 inch horizontal crossbraces and 3 wood dowel flags. This stand has the same mast and leg configuration as the series X-600 stands. The base connection on the X-642 is a heavy-duty foot-release base and leaf spring assembly instead of the X-600 series coil springs. The X-600 stand was also found acceptable in our letter WZ-13. Because of its similarity to the X-600 system, it was agreed that only 90-degree testing would be required to qualify the X-642 stand.

## Request 3

B2-1-972 Series Long Board Type I Barricade with 1830 mm (6 foot long or shorter) x 230 mm (9 inches) plastic plank and 1220 mm (48 inch) wide by 610 mm (24 inch) high, 2.0 mm (0.080 inch) thick polycarbonate panel (with a mass of 2 kg). This barricade is made from all recycled rigid PVC posts and plank. Tested at both 0 and 90 degrees. You also requested that this barricade be found acceptable with 1220 x 1220 mm signs of roll-up design or 15 mm thick Endurance<sup>TM</sup> material (with a maximum mass of 5.3 kg.).

## Request 4

The following sign stands were added to the Eastern Metal/USA-Sign product line. The distinguishing feature of these new items is the 150 mm (6 inch) extension of each telescoping leg section:

Current Accepted Product	New Product (Models), with extended legs
C-102 Series, Model #s C-132 and C-142	C-102L Series, Model #s C-132L and C-142L
C-802 Series, Model #s C-832 and 842	C-802L Series, Model #s C-832L and 842L
C-200/202 Series, Model #s C-232 and C-242	C-202L Series, Model #s C-232L and C-242L
C-902 Series, Model #s C-932 and C-942	C-902L Series, Model #s C-932L and C-942L

## Request 5

The following stands were revised by changing the way the legs pivot at the base. In the original design, a locking pin fit into a hole in a gusset plate to secure the position. The legs traveled on the outside face of the gussets. In the new design the gusset plates are moved away from the center of the stand and the legs travel on the inside face of the plates. The locking pin fits in a semi-circular track and the larger diameter shaft of the pin locks into larger diameter roundings at either end of the track.

Current Accepted Product	New Product (Models) with "Direct Drive" Base
X-500 Series, Model X-501	Model X-501K
X-550 Series, Model X-551K	Model X-551K
X-600/601 Series, Model X-601	Model X-601K

#### Request 6

- 6a. The X-550 series, Model number X-551 was found acceptable at 460 mm (18 inches) mounting height. Your request was to permit the use of this stand with a 1220 mm (48 inch) roll-up sign at 1525 mm (60 inches) above grade. The X-551 stand is similar to the heavier X-601 stand which was tested at the 1525 mm (60 inch) height, and the X-642 stand discussed below. The primary difference between the X-551 stand and the X-600 series stands is that the mast of the X-551 is shorter. In other words, the roll-up sign extends above the top of the X-551 stand. The sign is held in place with the same bracket as used in the X-601 stand. The bracket, located at the top of the mast attaches to a point at the center of the sign.
- 6b. The X-550 series, Model X-561. This is identical to Model X-551 except that the mast is 230 mm (9 inches) taller and each leg is extended 150 mm (6 inches), with a 1220 mm (48 inch) roll-up sign mounted at 1525 mm (60 inches above grade). In this case, the bracket is located slightly below the top of the mast, but still attaches to the middle of the sign.

#### **Testing**

Full-scale automobile testing was conducted on devices covered in the first three requests described above. The two sign stands were tested at 90 degrees, as we agreed that head-on testing had been satisfied earlier. Two stand-alone examples of the Type One barricade were tested in tandem, one head-on and the next placed six meters downstream turned at 90 degrees, as called for in our guidance memoranda. The complete devices as tested are shown in the Enclosure 1.

The crash tests are summarized in the table below:

Test Number	SQI99003-EM-7	SQI99003-EM-9	SQI99003-EM-11
Test Article	C222 Sign Stand	X-642 Sign Stand	B2-1-972 Series
Height to Bottom of Sign	813 mm	1778 mm	457 mm
Height to Top of Sign	2515 mm	3429 mm	1067 mm
Flags or signs	3 flags on wood sticks	3 flags on wood sticks	610x1219 mm Lexan sign
Test Article Mass (each)	12.7 kg	17 kg	22 kg
Vehicle Inertial Mass	821 kg	821 kg	815 kg
Orientation	90 deg.	90 deg.	Head on and 90 deg.
Impact Speed	103 km/hr	101 km/hr	103 km/hr,
Vehicle crush	Bumper, roof dents	Minimal	Bumper, hood dents
Occupant Compart. Intrusion	None	None	None
Windshield Damage Head-on	n/a	n/a	Moderate Cracking
Windshield Damage 90 Deg.	Moderate cracking	Minimal cracking	Moderate Cracking

### **Findings**

Damage was limited to moderate cracking of the windshields. None of the impacts of products for which you are requesting acceptance resulted in penetration of the windshield nor excessive vehicle velocity change. The results of tests detailed above met the FHWA requirements and, therefore, the devices described above and shown in the enclosed drawings for reference are acceptable for use as Test Level 3 devices on the NHS under the range of conditions tested, when proposed by a state.

We also concur in your requests for acceptance of the changes to previously accepted devices as detailed in Request 4, Request 5, and Request 6 detailed above.

In summary, this action finds the following devices acceptable as tested or as discussed above:

1. Model C-222 Extended Mast Super-Flex Compact Sign Stand with fiberglass leaf spring, 1220 mm "Rigid Roll Up"<sup>TM</sup> sign.
2. Model X-642 Hi Level Aluminum Sign Stand with fiberglass leaf spring, 1220 mm "Rigid Roll Up"<sup>TM</sup> sign.

3. B2-1-972 Series Long Board "Melba" Type I Barricade with 1830 mm (6 foot) long (or shorter) x 230 mm (9 inches) plastic plank and 1220 mm(48 inch) wide by 610 mm (24 inch) high 2 mm (0.080 inch) polycarbonate panel. Based on the analysis by Dr. Lance Bullard of Safety Quest, we also find it acceptable with 1220 mm (48 inch) diamond shape signs of roll-up or 15 mm Endurance™ material.
- 4.

New Product (Models), with extended legs
C-102L Series, Model #s C-132L and C-142L
C-802L Series, Model #s C-832L and 842L
C-202L Series, Model #s C-232L and C-242L
C-902L Series, Model #s C-932L and C-942L

5.

New Product (Models) with "Direct Drive" Base
Model X-501K
Model X-551K
Model X-601K

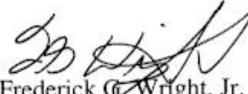
6. Model number X-551 stand supporting a roll-up sign in the center with sign mounting height at 1525 mm (60 inches) above grade. Also acceptable at a 1525 mm (48 inch) mounting height with a 230 mm (9-inch) taller mast and 150 mm (6 inch) longer legs, designated as Model number X-561.

Please note the following standard provisions which apply to FHWA letters of acceptance:

- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices(MUTCD).
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.

- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of FHWA and NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ- 56 shall not be reproduced except in full.
- Eastern Metal/USA Sign products may include patented components and if so are considered "proprietary." The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternative exists or; (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.

Sincerely yours,



Frederick C. Wright, Jr.  
Program Manager, Safety

2 Enclosures

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FHWA:HSA-1:NArtimovich:lb:x61331:9/15/00

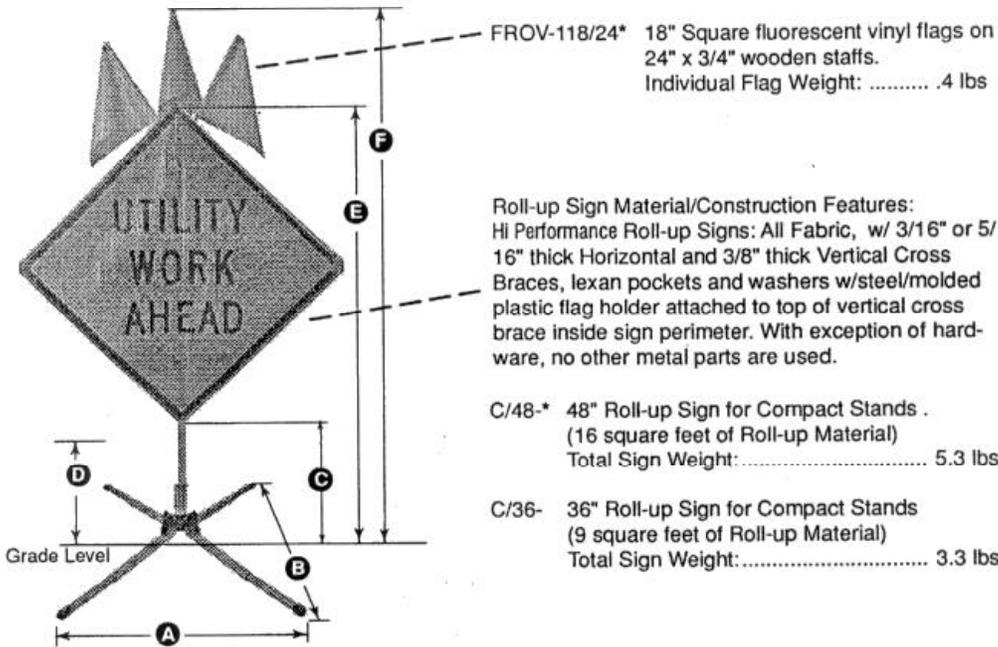
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# Product Specification Sheet

## C-222 Series Sign Stand



Description: Eastern Metal/USA-SIGN Hi Performance 48" Diamond Roll-up Sign with 3-18" wood dowel flags, attached to C-222 Series Extended Mast Super-flex Compact Sign Stand.



FROV-118/24\* 18" Square fluorescent vinyl flags on 24" x 3/4" wooden staffs.  
Individual Flag Weight: ..... .4 lbs

Roll-up Sign Material/Construction Features:  
Hi Performance Roll-up Signs: All Fabric, w/ 3/16" or 5/16" thick Horizontal and 3/8" thick Vertical Cross Braces, lexan pockets and washers w/steel/molded plastic flag holder attached to top of vertical cross brace inside sign perimeter. With exception of hardware, no other metal parts are used.

C/48-\* 48" Roll-up Sign for Compact Stands .  
(16 square feet of Roll-up Material)  
Total Sign Weight:..... 5.3 lbs

C/36- 36" Roll-up Sign for Compact Stands  
(9 square feet of Roll-up Material)  
Total Sign Weight:..... 3.3 lbs

Model Number	Description	Fully Extended Weight	Height Above Grade Level					
			Foot Print Width <b>A</b>	Foot Print Depth <b>B</b>	Bottom of Sign <b>C</b>	Top of Mast <b>D</b>	Top of Sign <b>E</b>	Top of Flag <b>F</b>
C-222*	Series Extended Mast Compact Sign Stand	28 lbs	49-1/4"	69-1/4"	32"	43-1/4"	99"	118"

### Stand Construction Features:

**Leg Tubing:** 16 ga. Cold-formed galvanized 1-1/4", 1" and 13/16" Square tubing ASTM-A500 Rated Steel.  
**Wind-deflecting Leaf-Spring:** 1/4" thick x 18" h x 2" w, custom formulated pultruded fiberglass sandwiched by protective plastic spacers with predictable shear point at approximately 6" above grade.  
**Extended Aluminum Tubing Mast** (.125 wall thickness x 1-9/16" & 1-1/4" square) attaches to leaf-spring with adjustable turn-knob pressure plate for movement up from lowest setting to create more flex. Mast Extension released by springs clip for raising to maximum height. Test performed at highest mast setting and mid-range spring setting. Same tightening turn-knob pressure plate concept used at mast top, to attach sign to stand at predetermined minimum height setting.

**Figure 2:** Product Specification Sheet (C-222 Series Sign Stand).

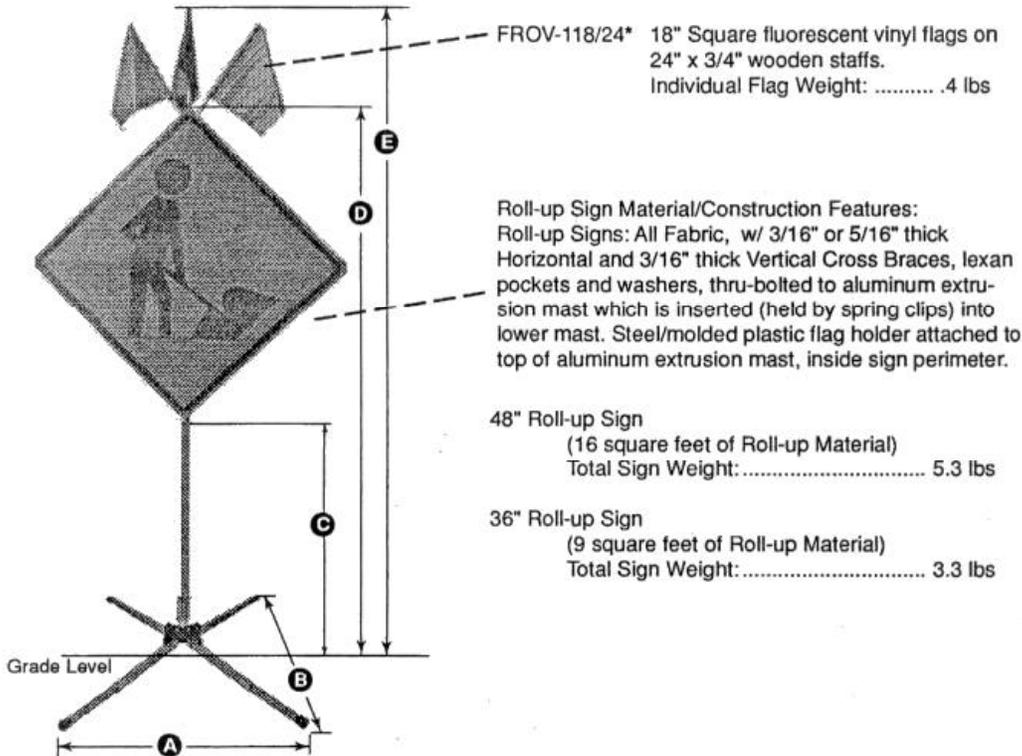
\*Tested Product

# Product Specification Sheet



## X-642(MI) Series Sign Stand

Description: Eastern Metal/USA-SIGN 48" Diamond Roll-up Sign with 3-18" wood dowel flags, attached to X-642(MI) Series Hi Level Aluminum Super-flex Sign Stand.



FROV-118/24\* 18" Square fluorescent vinyl flags on 24" x 3/4" wooden staffs.  
Individual Flag Weight: ..... .4 lbs

Roll-up Sign Material/Construction Features:  
Roll-up Signs: All Fabric, w/ 3/16" or 5/16" thick Horizontal and 3/16" thick Vertical Cross Braces, lexan pockets and washers, thru-bolted to aluminum extrusion mast which is inserted (held by spring clips) into lower mast. Steel/molded plastic flag holder attached to top of aluminum extrusion mast, inside sign perimeter.

48" Roll-up Sign  
(16 square feet of Roll-up Material)  
Total Sign Weight: ..... 5.3 lbs

36" Roll-up Sign  
(9 square feet of Roll-up Material)  
Total Sign Weight: ..... 3.3 lbs

Model Number	Description	Fully Extended Weight	Height Above Grade Level				
			Foot Print Width <b>A</b>	Foot Print Depth <b>B</b>	Bottom of Sign <b>C</b>	Top of Sign/Mast <b>D</b>	Top of Flag <b>E</b>
C-642(MI)*Series Hi Level Aluminum Stand		37.64 lbs	72"	114"	70"	135"	158"

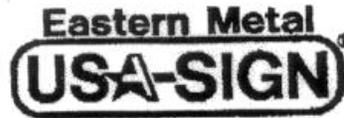
### Stand Construction Features:

**Stand Tubing:** .125" Wall thickness x 1-9/16" and 1-1/4" 6061-T6 Square Extruded Aluminum.  
**Wind-deflecting Leaf-Spring:** 1/4" thick x 18" h x 2" w, custom formulated pultruded fiberglass sandwiched by protective plastic spacers with predictable shear point at approximately 6" above grade.  
**Extended Aluminum Tubing Mast** Permanently attached to leaf-spring to create flex. Test performed at standard high setting.

**Figure 4:** Product Specification Sheet (X-642 Series Sign Stand).

\*Tested Product

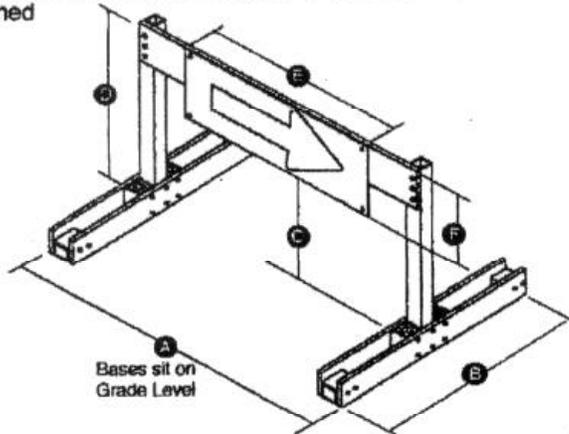
# Product Specification Sheet



## B2-1-972-EG Type I Long Board Barricade

Description:

Eastern Metal/USA-SIGN Melba 99 Type I "long board" 2-Skid Barricade with 48" wide x 24" high sign panel attached



Model Number	Description	Weight	Foot Print		Above Grade		Width of Sign	Height of Sign
			Width (A)	Depth (B)	Bottom of Sign (C)	Top of Sign (D)		
B2-1-972-EG-001*	Type I Barricade & Sign	48 lbs	74"	60"	18"	42"	48"	24"

### Common Material/Construction Features

**Barricade Panels:** 1-1/4" thick by 9" wide exterior 100% recycled UV stable Window Grade PVC. Outer wall shall be 1.5 - 2.4 mm with inside reinforcement wall of 0.9 - 1.2 mm.

**Vertical Support Tubing:** 42" High x 80mm Sq. Posts with a 2.6mm wall thickness (1 - .09mm), safety orange in color 100% Recycled PVC. 6" molded recycled PVC plug inserted in post bottom.  
 2 each, 6"x 80mm Sq. Posts with a 2.6mm wall thickness (1 - .09mm), safety orange in color 100% Recycled PVC with 6" plug inserted, used for added stability.

**Skid End Spacers:** 2 each, 6"x 80mm Sq. Sections, 100% recycled PVC.

**Sign Panel:** 48" wide x 24" high x .080 thick Polycarbonate Panel with reflective sheeting.

**Figure 6:** Product Specification Sheet (Type I Barricade).

\* Tested Product

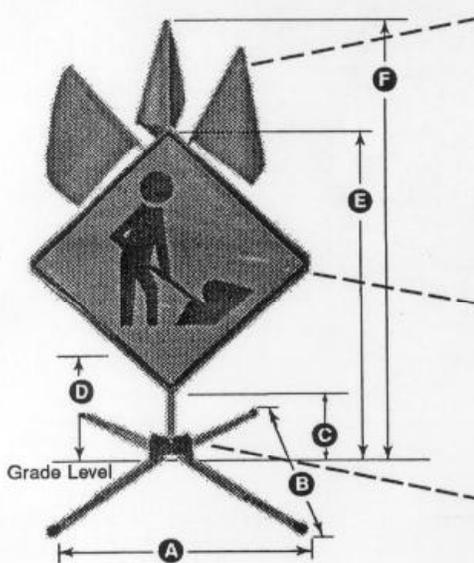
# Product Specification Sheet

## C-102 Series Sign Stand



### Description:

Eastern Metal/USA-SIGN C/48 Series C-Sign™, 48" Diamond Roll-up Sign with 3-18" wood dowel flags, attached to C-102 Series Compact™ Sign Stand.



#### FROV-118/24\*

Three 18" Square fluorescent vinyl flags on 24" long, 3/4" wooden staffs. Individual Flag Weight: ..... 0.4 lbs

#### Roll-up "C" Signs:

All Fabric, with 3/16" or 5/16" thick Horizontal and 3/8" thick Vertical Cross Braces, lexan pockets and washers with steel/molded plastic flag holder attached to top of vertical cross brace inside sign perimeter. With exception of hardware, no other metal parts are used.

#### C/48-Roll-up Sign\*

48" Roll-up Sign for Compact Stands has 16 square feet of Roll-up Material. Total Sign Weight: ..... 5.3 lbs

#### C/36-Roll-up Sign (Optional Smaller Size)

36" Roll-up Sign for Compact Stands has 9 square feet of Roll-up Material. Total Sign Weight: ..... 3.3 lbs

#### C-102 Series Compact Sign Stand

Total Individual Stand Weight: ..... 22.0 lbs

Model Number	Description	Weight	Fully Extended Foot Print		Height Above Grade Level			
			Width A	Depth B	Bottom of Sign C	Top of Mast D	Top of Sign E	Top of Flag F
C-102*	Series Standard Steel Super-Flex Compact Stand	22.0 lbs	41"	70"	15"	27-3/4"	82"	95-1/2"
C-102L	Same as C-102 with longer legs	24.0 lbs	50"	93"	15"	27-3/4"	82"	95-1/2"
C-142**	Same as C-102 with foot-release leg set-up method	20.0 lbs	40-1/2"	69"	15"	27-3/4"	82"	95-1/2"
C-142L	Same as C-142 with longer legs	22.0 lbs	50"	92"	15"	28-3/4"	83"	96-1/2"

#### Stand Construction Features (Common to All Models):

Stand Tubing: 16 ga. Cold-formed galvanized 1-1/4" and 1" tubing ASTM-A500 Rated Steel.  
Wind-deflecting: Non-deflecting mast, wind-deflection achieved from roll-up sign.

\*Tested Product

\*\*Approved Product by Comparison

For Review as Approved Product by Comparison

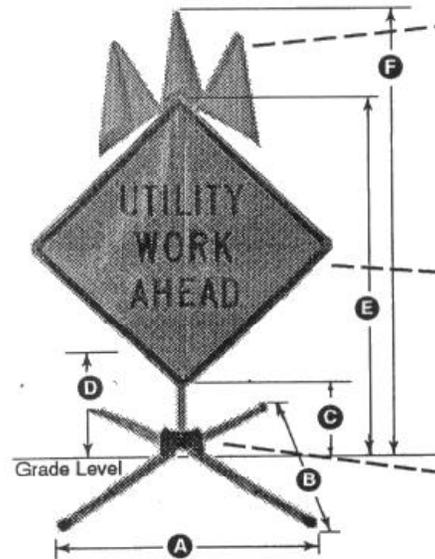
# Product Specification Sheet

## C-802 Series Sign Stand



### Description:

**Eastern Metal/USA-SIGN C/48 Series C-Sign, 48" Diamond Roll-up Sign with 3 wood dowel flags, attached to C-802 Series Compact™ Sign Stand.**



**FROV-118/24\***  
Three 18" Square fluorescent vinyl flags on 24" long 3/4" wooden staffs. Individual Flag Weight: ..... 0.4 lbs

#### Roll-up Signs:

All Fabric, with 3/16" or 5/16" thick Horizontal and 3/8" thick Vertical Cross Braces, lexan pockets and washers with steel/molded plastic flag holder attached to top of vertical cross brace inside sign perimeter. With exception of hardware, no other metal parts are used.

#### 48-Roll-up Sign\*

48" Roll-up Sign has 16 square feet of Roll-up Material.  
Total Sign Weight: ..... 5.3 lbs

#### C/36-Roll-up Sign (Optional Smaller Size)

36" Roll-up Sign has 9 square feet of Roll-up Material.  
Total Sign Weight: ..... 3.3 lbs

#### C-802 Series Compact Sign Stand

Total Individual Stand Weight: ..... 18.0 lbs

Model Number	Description	Weight	Fully Extended Foot Print		Height Above Grade Level			
			Width (A)	Depth (B)	Bottom of Sign (C)	Top of Mast (D)	Top of Sign (E)	Top of Flag (F)
C-802*	Series Standard Steel Super-Flex Compact Stand	18.0 lbs	41"	70"	15"	27-3/4"	82"	95-1/2"
C-802L	Same as C-802 with longer legs	19.0 lbs	50"	93"	15"	27-3/4"	82"	95-1/2"
C-842**	Same as C-802 with foot-release leg set-up method	16.0 lbs	40-1/2"	69"	15"	27-3/4"	82"	95-1/2"
C-842L	Same as C-842 with longer legs	17.0 lbs	50"	92"	16-1/2"	28-3/4"	83"	96-1/2"

#### Stand Material/Construction Features (Common to All Models):

Stand Tubing: .125" Wall thickness x 1-9/16" and 1-1/4" 6061-T6 Extruded Aluminum  
Wind-deflection: Non-deflecting mast, wind-deflection achieved from roll-up sign.  
Common 1-1/4" Steel tubing mini-mast.

\*Tested Product

\*\*Approved Product by Comparison

For Review as Approved Product by Comparison

6/30/20

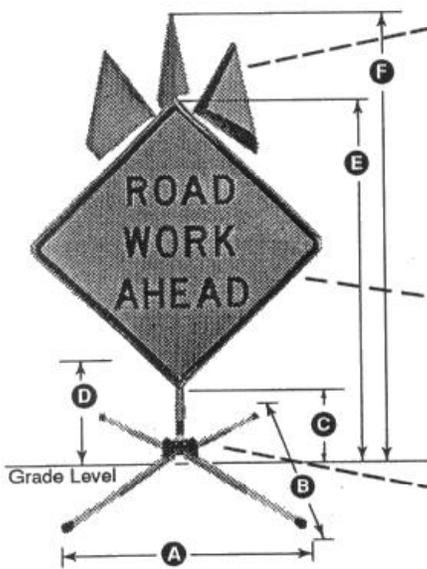
# Product Specification Sheet

## C-202/200 Series Sign Stand



### Description:

Eastern Metal/USA-SIGN C/48 Series C-Sign, 48" Diamond Roll-up Sign with 3-18" wood dowel flags, attached to C-202/200 Series Wind Deflecting Super-flex™ Compact™ Sign Stand.



#### FROV-118/24\*

Three 18" Square fluorescent vinyl flags on 24" long 3/4" wooden staffs. Individual Flag Weight: ..... 0.4 lbs

#### Roll-up "C" Signs:

All Fabric, with 3/16" or 5/16" thick Horizontal and 3/8" thick Vertical Cross Braces, lexan pockets and washers with steel/molded plastic flag holder attached to top of vertical cross brace inside sign perimeter. With exception of hardware, no other metal parts are used.

#### C/48-Roll-up Sign\*

48" Roll-up Sign for Compact Stands has 16 square feet of Roll-up Material. Total Sign Weight: ..... 5.3 lbs

#### C/36-Roll-up Sign (Optional Smaller Size)

36" Roll-up Sign for Compact Stands has 9 square feet of Roll-up Material. Total Sign Weight: ..... 3.3 lbs

#### C-202 Series Compact Sign Stand

Total Individual Stand Weight: ..... 24.0 lbs

Model Number	Description	Weight	Fully Extended Foot Print		Height Above Grade Level			
			Width (A)	Depth (B)	Bottom of Sign (C)	Top of Mast (D)	Top of Sign (E)	Top of Flag (F)
C-202*	Series Standard Steel Super-Flex Compact Stand	24.0 lbs	42-1/2"	69"	18"	26-1/2"	85"	98-1/2"
C-202L	Same as C-202 with longer legs	26.0 lbs	50"	93"	18"	26-1/2"	82"	98-1/2"
C-200**	Same as C-202 with Different Pull-release leg set-up method	28.0 lbs	46"	72-1/2"	18"	27-1/2"	85"	98-1/2"
C-242**	Same C-202 with foot-release leg	22.0 lbs	42"	68"	18"	26-1/2"	85"	98-1/2"
C-242L	Same as C-242 with longer legs	24.0 lbs	50"	93"	18"	26-1/2"	82"	98-1/2"

#### Stand Material/Construction Features (Common to All Models):

Stand Tubing: 16 ga. Cold-formed galvanized 1-1/4", and 1" tubing ASTM-A500 Rated Steel.

Wind-deflecting Leaf-Spring™: 1/4" thick x 18" h x 2" w, custom formulated pultruded fiberglass sandwiched by protective plastic spacers with predictable shear point at approximately 6" above grade.

Common 1-1/4" Steel tubing mini-mast attaches to leaf-spring with adjustable turn-knob pressure plate for movement up from lowest setting to create more flex. Test performed at mid-range setting. Same tightening turn-knob pressure plate concept used at mast top, to attach sign to stand at predetermined minimum height setting.

\*Tested Product

\*\*Approved Product by Comparison

For Review as Approved Product by Comparison

6/30/20

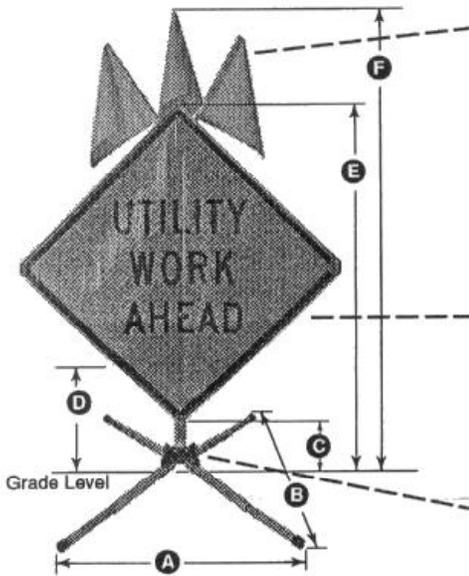
# Product Specification Sheet

## C-902 Series Sign Stand



**Description:**

Eastern Metal/USA-SIGN C/48 Series C-Sign, 48" Diamond Roll-up Sign with 3-18" wood dowel flags, attached to C-902 Series Wind Deflecting Super-flex™ Compact™ Sign Stand.



**FROV-118/24\***  
Three 18" Square fluorescent vinyl flags on 24" long 3/4" wooden staffs. Individual Flag Weight: ..... 0.4 lbs

**Roll-up "C" Signs:**

All Fabric, with 3/16" or 5/16" thick Horizontal and 3/8" thick Vertical Cross Braces, lexan pockets and washers with steel/molded plastic flag holder attached to top of vertical cross brace inside sign perimeter. With exception of hardware, no other metal parts are used.

**C/48-Roll-up Sign\***  
48" Roll-up Sign for Compact Stands has 16 square feet of Roll-up Material. Total Sign Weight: ..... 5.3 lbs

**C/36-Roll-up Sign (Optional Smaller Size)**  
36" Roll-up Sign for Compact Stands has 9 square feet of Roll-up Material. Total Sign Weight: ..... 3.3 lbs

**C-902 Series Compact Sign Stand**  
Total Individual Stand Weight: ..... 20.0 lbs

Model Number	Description	Weight	Fully Extended Foot Print		Height Above Grade Level			
			Width (A)	Depth (B)	Bottom of Sign (C)	Top of Mast (D)	Top of Sign (E)	Top of Flag (F)
C-902*	Series Standard Steel Super-Flex Compact Stand	20.0 lbs	42-1/2"	69"	18"	26-1/2"	85"	98-1/2"
C-902L	Same as C-902 with longer legs	21.0 lbs	50"	93"	18"	26-1/2"	85"	98-1/2"
C-942**	Same as C-902 with foot-release leg set-up method	18.0 lbs	42"	68"	18"	26-1/2"	85"	98-1/2"
C-942L	Same as C-942 with longer legs	19.0 lbs	50"	92"	18"	26-1/2"	85"	98-1/2"

**Stand Construction Features (Common to All Models):**

**Stand Tubing:** .125" Wall thickness x 1-9/16" and 1-1/4" 6061-T6 Extruded Aluminum.

**Wind-deflecting Leaf-Spring:** 1/4" thick x 18" h x 2" w, custom formulated pultruded fiberglass sandwiched by protective plastic spacers with predictable shear point at approximately 6" above grade.

**Common Steel tubing mini-mast** attaches to leaf-spring with adjustable turn-knob pressure plate for movement up from lowest setting to create more flex. Test performed at mid-range setting. Same tightening turn-knob pressure plate concept used at mast top, to attach sign to stand at predetermined minimum height setting.

\*Tested Product

\*\*Approved Product by Comparison

For Review as Approved Product by Comparison

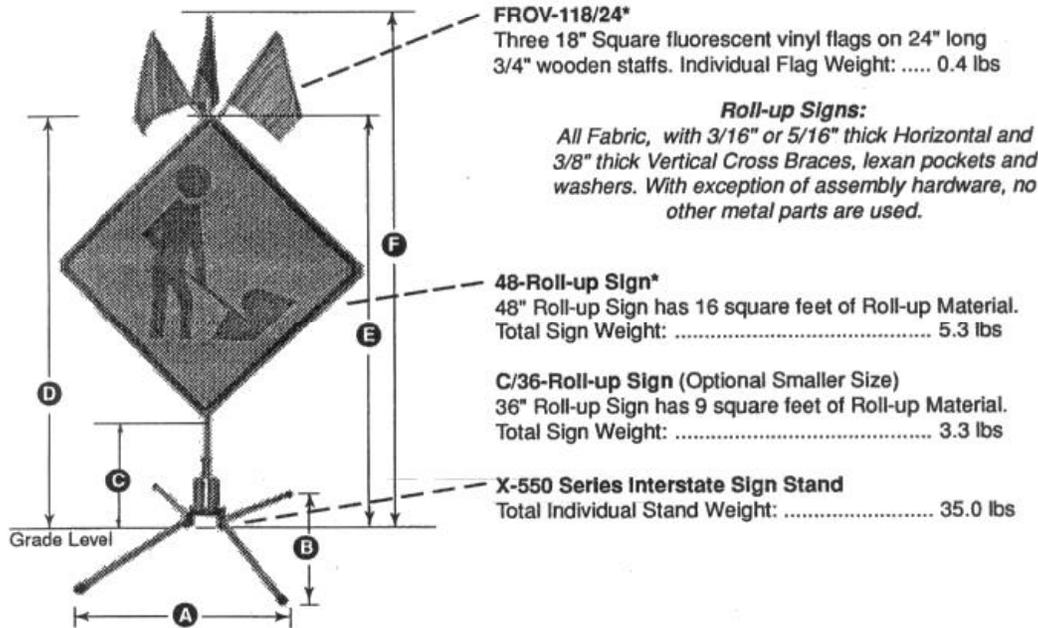
# Product Specification Sheet

## X-550/560 Series Sign Stands



### Description:

**Eastern Metal/USA-SIGN 48" Diamond Roll-up Sign and 3 wood dowel flags, attached to X-550/X-560 Series Wind Deflecting Interstate Series™ Sign Stand.**



**FROV-118/24\***  
Three 18" Square fluorescent vinyl flags on 24" long 3/4" wooden staffs. Individual Flag Weight: ..... 0.4 lbs

**Roll-up Signs:**  
All Fabric, with 3/16" or 5/16" thick Horizontal and 3/8" thick Vertical Cross Braces, lexan pockets and washers. With exception of assembly hardware, no other metal parts are used.

**48-Roll-up Sign\***  
48" Roll-up Sign has 16 square feet of Roll-up Material.  
Total Sign Weight: ..... 5.3 lbs

**C/36-Roll-up Sign (Optional Smaller Size)**  
36" Roll-up Sign has 9 square feet of Roll-up Material.  
Total Sign Weight: ..... 3.3 lbs

**X-550 Series Interstate Sign Stand**  
Total Individual Stand Weight: ..... 35.0 lbs

Model Number	Description	Weight	Fully Extended Foot Print		Height Above Grade Level			
			Width (A)	Depth (B)	Bottom of Sign (C)	Top of Mast (D)	Top of Sign (E)	Top of Flag (F)
X-551*	Mid Size Interstate Dual Coil Spring Steel Sign Stand with steel Roll-up Sign bracket on mast	35.0 lbs	36"	80"	18"	96"	96"	116"
X-561	Same as the X-551 with a taller mast and longer legs	37.0 lbs	45"	91"	62-1/2"	101"	129-1/2"	143"

\*Note: On the X-561 flags are in a flag holder on sign and not in a flag holder on the stand mast as with the X-551

### Stand Material/Construction Features (Common to All Models):

**Stand Tubing:** 16 ga. Cold-formed galvanized 1-1/4", and 1" tubing ASTM-A500 Rated Steel.

**Spring System:** 2 Vertical heavy coil steel springs mounted to base and mast with bolt/lock washer set threading into custom composite cast "plug" turned into spring.

**Base, Sign Bracket(s), Flag Holder, Connecting Brackets:** Formed/Fabricated Steel with powder coated or galvanized finish.

\*Tested Product

For Review as Approved Product by Comparison

Sec. 635.411 Material or product selection.

(a) Federal funds shall not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless:

(1) Such patented or proprietary item is purchased or obtained through competitive bidding with equally suitable unpatented items; or

(2) The State highway agency certifies either that such patented or proprietary item is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists; or

(3) Such patented or proprietary item is used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes.

(b) When there is available for purchase more than one nonpatented, nonproprietary material, semifinished or finished article or product that will fulfill the requirements for an item of work of a project and these available materials or products are judged to be of satisfactory quality and equally acceptable on the basis of engineering analysis and the anticipated prices for the related item(s) of work are estimated to be approximately the same, the PS&E for the project shall either contain or include by reference the specifications for each such material or product that is considered acceptable for incorporation in the work. If the State highway agency wishes to substitute some other acceptable material or product for the material or product designated by the successful bidder or bid as the lowest alternate, and such substitution results in an increase in costs, there will not be Federal-aid participation in any increase in costs.

(c) A State highway agency may require a specific material or product when there are other acceptable materials and products, when such specific choice is approved by the Division Administrator as being in the public interest. When the Division Administrator's approval is not obtained, the item will be nonparticipating unless bidding procedures are used that establish the unit price of each acceptable alternative. In this case Federal-aid participation will be based on the lowest price so established.

(d) Appendix A sets forth the FHWA requirements regarding (1) the specification of alternative types of culvert pipes, and (2) the number and types of such alternatives which must be set forth in the specifications for various types of drainage installations.

(e) Reference in specifications and on plans to single trade name materials will not be approved on Federal-aid contracts.

ENCLOSURE 2